

Droughts.—West Charlotte, Vt., 25th, drought very severe; Lake Champlain lower than ever remembered in fifty years, and falling every day. Waltham, Mass., drought during last half of month. Hector, N. Y., severe drought throughout the month. 17th, Brooklyn, N. Y., "no rain has fallen here for a month, and wells on Staten Island and in Jersey City are drying up;" New York City, "comparison with records for past twenty years, shows that the rain-fall from September 1st to October 17th, has not been as low as this year;" Philadelphia, "in towns well up the Schuylkill a water famine is prevailing. The Schuylkill is lower than for an indefinite period. Hundreds of canal boats are laid up for want of water to move them; "the drought in southern Livingston and northern Steuben Cos., N. Y., has already caused great damage to pastures, winter wheat and late corn." Nile, N. Y., 31st, great scarcity of water, many wells dry. Newburg, N. Y., 19th, authorities ordered the greatest economy in using water for fear of famine. 17th, Farmers throughout Camden and Burlington Co's, N. J., report fall crops suffering for want of rain and that water for domestic uses is difficult to obtain. Such an extended spell of dry weather has not been known for years in west and south Jersey." Lindeu, N. J., during 45 days rain-fall only 0.32; great scarcity of water. Wellsboro, Pa., drought unprecedented; the Tioga and Cowanesque rivers nearly dry; streams, springs and wells dry; water for domestic use hauled long distances. Schuylkill Co., Pa., severe drought continuing still on the 11th; many collieries stopped for a lack of water, crops already injured; at Mahanoy Plane "the wells in the town have been exhausted for some time, and the people are obliged to bring water half-a-mile." Harbour Creek, Pa., "people suffering from the effects of a prolonged drought; streams, springs and wells that never failed before are now nearly exhausted." Reading, Pa., "very severe drought; no rain has fallen for many weeks, streams, wells and springs are all drying up; water supply for city entirely inadequate for domestic uses." Pittsburg, Pa., "very severe drought is still prevailing in the surrounding country, wells dry, pastures scorched and burned up, and stock suffering severely for want of food and water." Catawissa, Pa., "severe drought during the entire month, streams unusually low, and nearly all wells exhausted. North branch of the Susquehanna river at this place two inches lower than established low water mark." Dyberry, Pa., 31st, "water for domestic purposes carried long distances, many wells and springs drying up." Fallston, Md., in "45 days preceding October 20th only 0.30 inches rain-fall, many springs and wells exhausted." Petersburg, Va., 26th, "mills which have been on quarter capacity for lack of water commenced running full capacity from late rains." Walnut Grove, Va., driest October for many years. West Liberty, Ohio, 31st, the whole country about suffering for want of rain. Ringgold, Ohio, 17th to 30th, severe drought. North Lewisburg, Ohio, 31st, exceedingly dry, only 0.63 inches of rain has fallen in the last 42 days. Westerville, Ohio, 31st, wells failing. Little Mountain, Ohio, "the driest October ever observed." Augusta, Ill., 21st, wells getting dry and water scarce. Springfield, Ill., 24th, all railroads leading into the city were obliged to run daily water trains on account of the drought. Wabash, Ind., "greater deficiency in the rainfall of the present month than for the month of October during the past 14 years; creeks and springs never before known to fail are dry; the greatest scarcity of water prevails in all sections of the country remote from the river, which at this place is lower than ever known before." Embarrass, Wis., 31st, brooks and rivers very low and many wells dry. Fort Madison, Ia., drought worse than last month. Prof. Nipher, of Missouri Weather Service, reports it "the driest October in 40 years; the area of smallest rain-fall extending from St. Louis to the northwest, its western boundary being the summit of the "divide" between the drainage systems of the Missouri and Mississippi rivers." Chattanooga, Tenn., 3rd, "drought is commencing to be felt." Fayette, Miss., 31st, vegetation scorched and water very scarce. Clarks-ville, Tex., "month has been very dry, and the earth is so parched that but little winter grain has been sown." Melissa, Tex., 2nd, drought of August and September ended. Sulphur Springs, Tex., 29th, the "long drought still continues." Coalville, Utah, 7th, "very dry, first rain since April." Winnemucca, Nev., 22nd, "Humboldt river is reported very low, and fears are entertained of a scarcity of water." Cloverdale, Cal. 31st, many places in Russian river dry.

RELATIVE HUMIDITY.

The percentages of mean Relative Humidity for the month range as follows: New England, 64 to 81; Middle Atlantic States, 66 to 80; South Atlantic States, 68 to 82; Eastern Gulf States, 72 to 82; Western Gulf States, 64 to 72; Ohio valley and Tennessee, 59 to 74; Lower Lakes, 65 to 74; Upper Lakes, 65 to 77; Upper Mississippi valley, 60 to 65; Lower Missouri valley, 59 to 65; Red River of the North valley, 61 to 75; Northern Rocky Mountain Slope, 52 to 59; Texas, 49 to 82; Southern Plateau districts, 32 to 54; California, 48 to 69; Oregon, 74 to 80. *High stations* report the following averages, not corrected for altitude: Mt. Washington, 88.3; Cheyenne, 33; Denver, 35.6; Santa Fe, 41.5; Pike's Peak, 42.7; Virginia City, 48.4.

WINDS.

Total Movements of the Air.—The following were the largest monthly movements in miles recorded at the Signal Corps stations: Pike's Peak, 16,091 miles; North Platte, 13,249; Breckeuridge, 12,007; Cape Lookout, 10,626; Key West, 10,552; Portsmouth, N. C., 10,510; Cape May, 10,087; Thatcher's Island, 10,010; Sandy Hook, 9,855; Yankton, 9,657; Kittyhawk, 9,411; Punta Rassa, 9,219; Sandusky, 8809; Indianola, 8,745; Bismarck, 8,720; Cape Hatteras, 8,543. The *smallest* movements were: Silver City, N. M., 1,148 miles; La Mesilla, N. M., 1,512; Visalia, Cal., 1,656; Lynchburg, 1,821; Roseburg, Or., 1,997; Laredo, Tex., 2,031; Fredericksburg, Tex., 2,209; Uvalde, Tex., 2,379; Shreveport, 2,511; Indianapolis, 2,495; Deadwood, 2,532; Socorro, N. M., 2,548; San Antonio, Tex., 2,637; Graham, Tex., 2,679; Brownsville, Tex., 2,773.

Local Storms.—Matronsville, Tuscola, Co., Mich., 3rd, p. m., a "cyclone" accompanied by heavy rains passed over the county fair grounds doing great damage; cloth tents were torn to shreds; fences blown down, and much other destruction committed. "Waynesborough, Ga., 10th, very destructive storm demolishing a church and uprooting many trees."

Sand-storms.—Fort Yuma, Cal., 7th, 13th, 14th, 25th, 27th; Visalia, Cal., 7th; Los Angeles, Cal., 8th; Burkes Ariz., 18th, 26th and 27th.

VERIFICATIONS.

Indications.—The detailed comparison of the tri-daily weather indications for October with the telegraphic reports for the succeeding twenty-four hours, shows the general percentage of omissions to be 0.87 per cent, and of verifications to be 86.3 per cent. The percentages for the four elements have been, Weather, 91.4; Direction of the Wind, 87.0; Temperature, 86.9; Barometer, 82.5. The percentages of verifications by geographical districts, have been: New England, 85.8; Middle States, 89.5; South Atlantic States, 87.3; Eastern Gulf States, 87.9; Western Gulf States, 85.2; Lower Lake region, 88.2; Upper Lake region, 89.5; Tennessee and the Ohio valley, 88.2; Upper Mississippi valley, 84.0; Lower Missouri valley, 85.0; Northern Pacific coast region, 65.7; Central Pacific coast region, 95.2; Southern Pacific coast region, 100.0. Of the 3,750 predictions that have been made, 137, or 3.62 per cent, are considered to have entirely failed; 87, or 2.30 per cent, were one-fourth verified; 408, or 10.79 per cent, were one-half verified; 330, or 8.73 per cent, were three-fourths verified; 2,818, or 74.55 per cent, were fully verified, so far as can be judged from the tri-daily weather maps.

Cautionary Signals.—166 Cautionary Signals were displayed during the month, of which 114, or 68.7 per cent., were justified by winds of 25 miles per hour or over at, or within a radius of 100 miles of, the station. 51 Cautionary Off-shore Signals were displayed, which were all justified as to direction, and of which 44, or 86.3 per cent., were fully justified. Of the Cautionary Off-Shore Signals, 15 were changed from Cautionary. 217 Signals of both kinds were displayed, of which 158, or 72.8 per cent., were fully justified. The above does not include signals ordered at 52 display stations where the velocity is only estimated. 52 cases were reported of winds of 25 miles or over where signals were not ordered.

NAVIGATION.]

In the table in the right hand side of Chart No. III are given the highest and lowest readings of the Signal Service river-gauges for the month, with the dates of the same. The rivers have continued very low throughout the entire month. The low stage of water in the Red and Ohio rivers deserve special notice. The Red River at Shreveport continued below the previous low water mark, and on the 31st had fallen to 41 inches below it, navigation continuing entirely suspended. The Arkansas at Little Rock fell on the 11th to a lower level than ever before known, and the observer reports great scarcity of water throughout that section. The Ohio at Pittsburgh was 13 inches below previous low-water mark on the 19th and 20th; at Wellsboro', W. Va., near the end of the month, the river was two inches lower than known before, and at Louisville, on the end of the month, it was reported lower than before known, "there being scarcely two feet depth of water in many places, while what is known as the falls presented a bleak and barren appearance, huge rocks and stone-bed being visible for miles." At Trenton, N. J., on the 18th the Delaware river was lower than it had been for many years. The lakes are also very low, the water in Grand Traverse Bay, Lake Michigan, on the 31st being lower than for many years past, and in Sandusky Bay, Lake Erie, on the same date, lower than for twenty years past. Lake Champlain was reported on the 31st to be lower than for the last fifty years, and falling. The only high waters during the month worthy of notice occurred on the 19th and 20th in the rivers rising in the Cumberland and Blue Ridge Mountain region. The Savannah at Augusta rose to 23 feet, and the Tennessee, at Chattanooga, to 13 feet on the above dates.

High Tides.—St. Marks, Fla., 7th, five feet above the mean; Cape Lookout, N. C., 13th, 14th, 16th, 17th and 18th; Cape Hatteras, N. C., 13th and 14; Ft. Macon, N. C., 16th to 18th unusually high tides; Barnegat, N. J., 15th, unusually high; Jacksonville, Tenn., 16th, highest tide ever known on the bar at the mouth of St. Johns river; Punta Rassa, 15th; Indianola, Tex., 2nd, 3rd, 8th, 9th, 10th, 11th, 12th, 16th, 17th, 18th, 20th, 24th, 26th and 28th; Portsmouth, N. C., 12th, 14th and 16th; Cape Lookout, N. C., 13th, 15th, 16th, 17th and 18th; Eastport, Me., 16th, 17th, 20th and 21st.

TEMPERATURE OF WATER.

The Temperatures of water, as observed in rivers and harbors, with average depth at which the observations were taken, are given on Chart No. II. At the following stations no observations were made on the dates indicated:—At Augusta, from the 24th to the 31st, and at Norfolk from the 13th to the 24th, by reason of breakage of thermometer; and at Cleveland on the 19th, 23rd, 24th, and from the 28th to 31st, the lake being too rough for observations to be made. Reports are not yet to hand from Escanaba, and the Station at St. Marks, Fla., has been discontinued.

ATMOSPHERIC ELECTRICITY.

Thunder-storms.—These storms have been reported in considerable numbers during the month. They were most numerous and widespread, as follows: On the 28th they generally occurred in New England and the Middle Atlantic States. On the 10th and 11th they prevailed in the South Atlan-